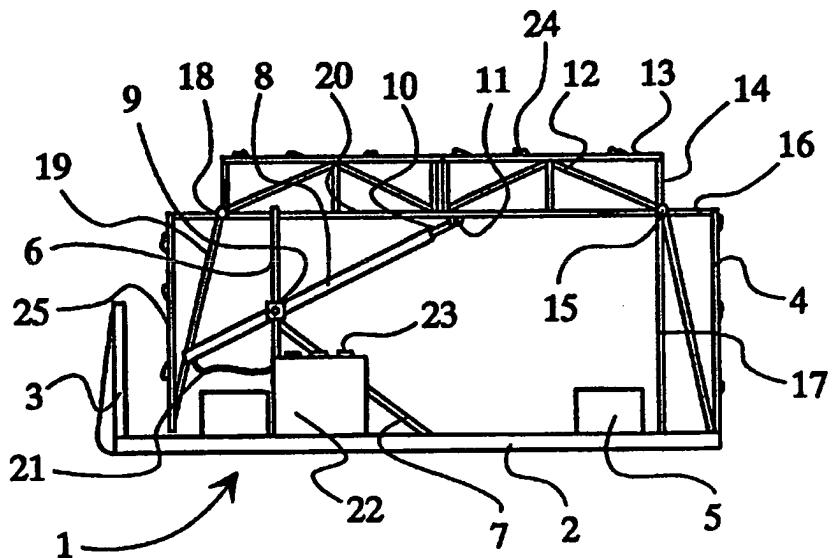




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6: A63B 69/00		A1	(11) International Publication Number: WO 95/31257 (43) International Publication Date: 23 November 1995 (23.11.95)
(21) International Application Number: PCT/FI95/00259			(81) Designated States: AU, JP, NO, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
(22) International Filing Date: 17 May 1995 (17.05.95)			
(30) Priority Data: U940287 17 May 1994 (17.05.94)	FI		Published <i>With international search report. In English translation (filed in Finnish).</i>
(71) Applicant (for all designated States except US): KAR-JALAINEN, Martti [FI/FI]; Kaskelantie 84, FIN-04220 Kerava (FI).			
(71)(72) Applicant and Inventor: VIRTANEN, Jorma, Kalevi [FI/FI]; Kalevankatu 53 A 2, FIN-04230 Kerava (FI).			
(74) Agent: JVP-PALVELU OY; Torikatu 4, FIN-05800 Hyvinkää (FI).			

(54) Title: PROCEDURE FOR MOUNTING AND DISMOUNTING A CLIMBING WALL, AND A CLIMBING WALL



(57) Abstract

The invention relates to a climbing wall, e.g. for outdoor use. The climbing wall comprises a wall part and a structure to which the wall part is attached. The climbing wall consists of at least two climbing sections linked together with a joint, of which the lower section (4) is substantially a fixed part and the upper section (13, 25) can be turned by means of a power means, such as a hydraulic cylinder (8), from a transport position to a climbing position so that the upper section forms an extension of the lower section.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

PROCEDURE FOR MOUNTING AND DISMOUNTING A CLIMBING WALL,
AND A CLIMBING WALL

The present invention relates to a procedure as defined
5 in the preamble of claim 1 for mounting and dismounting a
climbing wall and to a climbing wall as defined in the
preamble of claim 3.

Climbing is a sport whose popularity is rapidly growing.
10 Climbing activities are already being organised as competitions and at an amateur level in connection with various events, in the courtyards of restaurants and as extra pursuits at exhibitions. Climbing walls in indoor spaces are usually fixed structures, but those used in outdoor
15 spaces consist of movable structures that are usually assembled by using modular scaffolding. The drawbacks of the use of modular scaffolding include slow mounting, which takes one to two days, and slow dismounting, which also takes a whole day. As the mounting and dismounting
20 operations require a work force of two or three people, the use of known climbing walls is also fairly expensive. A further drawback is that the scaffolding requires plenty of space and is environmentally unaesthetic.

25 The object of the present invention is to eliminate the drawbacks mentioned above and to achieve a reliable and simple climbing wall which can be quickly mounted and dismounted. The procedure of the invention for mounting a climbing wall is characterized by what is presented in
30 the characterization part of claim 1. The climbing wall of the invention is characterized by what is presented in the characterization part of claim 3. Other embodiments of the invention are characterized by what is presented in the other claims.

35

The climbing wall of the invention has the advantages of ease of use, simplicity and fast and advantageous mounting and dismounting. Mounting and dismounting take only

about 15 minutes, and the supporting structure of the wall is so small that it does not require a large space and has no unaesthetic effect on the environment. As the climbing wall can be quickly mounted and dismounted, it
5 can be erected in several places during the same day. A further advantage is that the climbing tracks can be set up while the wall is in a horizontal position, which makes it considerably easier to set up the tracks. Moreover,
10 as the climbing wall is implemented on the principle of a travelling platform, its transportation is very easy.

In the following, the invention is described by the aid of an application example by referring to the attached
15 drawings, in which

Fig. 1 presents an axonometric representation of the climbing wall in transport position in an oblique top view,

20 Fig. 2 presents the climbing wall in transport position in lateral view,

Fig. 3 presents the climbing wall in climbing position in lateral view,

Fig. 4 - 6 present the climbing wall in different stages
25 of operation in a simplified lateral view,
and

Fig. 7 present the climbing wall in an alternative climbing position in a simplified lateral view.

30 The climbing wall of the invention is constructed as a travelling platform unit 1, which consists of longitudinal main beams 2 laid on a horizontal plane and a vertical front wall 3 attached to their first ends and a vertical rear wall 4 attached to the other ends of the main
35 beams, the outward-facing back surface of the rear wall constituting the lower part of the climbing wall. The rear wall is fastened to the main beams with trussed bars as exemplified by the numbered bars 16 and 17 in Fig. 1.

Placed on the main beams near each end of the beams are weights 5 consisting e.g. of concrete beams. The purpose of the weights is to stabilize the climbing wall in its climbing position. Placed in a suitable location between 5 the front and rear walls is a supporting frame 6 laid in the same direction with said walls and consisting of horizontal and vertical beams. The supporting frame is additionally fastened to the main beams by means of diagonal struts 7. The structure also comprises a hydraulic 10 unit 22 used as its power unit, driven by normal lighting electricity.

Pivoted on the supporting frame 6 by means of a horizontal joint 9 are hydraulic cylinders 8 which receive their 15 driving power from a hydraulic unit 22 via hydraulic hoses 21. The system preferably comprises two hydraulic cylinders, and these are placed symmetrically with respect to each other on either side of the longitudinal axis of the climbing wall. The piston part 10 of each hydraulic cylinder is linked with a joint 11 to a longitudinal beam 20 in the trussed structure of the middle section 13 of the climbing wall. The trussed structure additionally comprises other bracing bars, such as cross members 14 and diagonal struts 12. The trussed structure of 20 the middle section 13 of the climbing wall is pivoted on the trussed structure of the rear wall by means of a horizontal joint 15. In the transport position, the middle section 13 of the climbing wall is in a horizontal position, but in the climbing position it is turned up 25 into a substantially upright position and the middle section of the wall is fixed by its trussed structure to the trussed structure of the rear wall 4. The fastening is implemented using securing bolts, by means of which the cross members 16 of the rear wall are fastened to the cross members 14 of the middle section.

The trussed structure 19 of the top section 25 of the climbing wall is pivoted on the trussed structure of the

middle section by means of a horizontal joint 18. In the transport position, the top section 25 of the climbing wall is in an upright position with its top end pointing downwards. The climbing wall is so dimensioned with respect to the main beams that, in the transport position, the top section 25 remains on the inner side of the front wall, i.e. between the front and rear walls, close to the back side of the front wall. Correspondingly, in the climbing position, the top section of the wall is turned up into a substantially upright position with the top end pointing upwards, the top section of the wall being fastened by its trussed structure to the trussed structure of the middle section. The fastening is implemented using securing bolts in the same way as the corresponding attachment between the rear wall and the middle section.

Since the climbing wall of the invention may consist of several sections, e.g. the term 'upper section of the climbing wall' will be used below. This refers to the whole collapsible portion of the climbing wall, which comprises the top section 25 and the middle section 13 but which could also consist of a single continuous part without a separate top section.

The climbing wall is mounted and dismounted as follows: The climbing wall is carried to the site on a truck provided with a transfer table function and then lowered to the ground at a desired location. Electricity to the hydraulic unit 22 is switched on and, using the controls 23, the assembly consisting of the middle section 13 and the top section 25 is raised sufficiently to allow the top section 25 to be turned out so that it forms an extension of the middle section in alignment with the latter, whereupon the top section is fastened to the middle section in the manner described above. If necessary, the climbing track can be set up at this stage by placing the foothold blocks 24 in desired locations. After the track has been set up and the top section fastened to the mid-

dle section as an extension of the latter, the climbing wall is raised completely to an upright position by means of the hydraulic cylinders 8. In the upright position of the wall, the lowest cross members 14 of the middle section lie immediately above the topmost cross members of the rear wall 4 or bottom section and said cross members are tightened against each other by means of securing bolts to ensure the stability of the wall. The climbing wall is now ready for use by climbers. After use, the wall is collapsed into the transport position and lifted onto a truck like a normal travelling platform.

It is obvious to a person skilled in the art that the invention is not restricted to the example described above, but that the embodiments of the invention may instead be varied in the scope of the claims presented below. Thus, the power means may consist of a single high-power hydraulic cylinder or it may consist of one or more pneumatic cylinders, spindle motors, screws, etc. Moreover, instead of using an external lighting electricity supply, it is possible to use the truck's own hydraulic or pneumatic system. If no mains current is readily available, it is possible to use a separate generator. In addition, the position of the wall can be varied. The middle section or the top section of the wall can be turned into a negative angle to make climbing more difficult. Fig. 7 presents an alternative of this type. Furthermore, the height of the top section of the wall can be varied and it is also possible to add a substantially horizontal part to the top end of the top section to represent a ledge. The turning of the top section 25 relative to the middle section 13 can also be implemented by hydraulic or other means, and auxiliary cylinders directed sideways and downwards can be used to hold the whole structure steady.

CLAIMS

1. Procedure for mounting and dismounting a climbing wall comprising a wall part and a structure to which the wall part is attached, characterized in that the mounting portion of the procedure comprises at least the following stages:

- the climbing wall unit, transported to the site on a transport means such as a truck, is lowered from the platform of the transport means to the ground
- the climbing wall is raised to an upright position by means of one or more power means (8) by turning the upper section (13,25) of the climbing wall about a joint (15) between the bottom section (4) and the upper section
- the upper section is locked by its lower end onto the bottom section (4),

and that the dismounting portion of the procedure comprises at least the following stages:

- the locking between the upper section and the bottom section (4) is released
- the upper section of the climbing wall is lowered substantially to its transport position by means of one or more power means (8) by turning the upper section about a joint (15) between the bottom section (4) and the upper section
- the whole assembly is lifted onto the platform of a transport means, such as a truck.

2. Procedure according to claim 1, characterized in that the mounting portion of the procedure comprises at least the following stages:

- the climbing wall unit, transported to the site on a transport means such as a truck, is lowered from the platform of the transport means to the ground

- the top section (25) is turned into a desired climbing position relative to the middle section (13) and the top section is locked onto the middle section
- the climbing wall is raised into an upright position by means of one or more power means (8) by turning the combination of the top and middle sections about a joint (15) between the bottom section (4) and the middle section,
- the middle section (13) is locked by its lower end onto the bottom section (4),

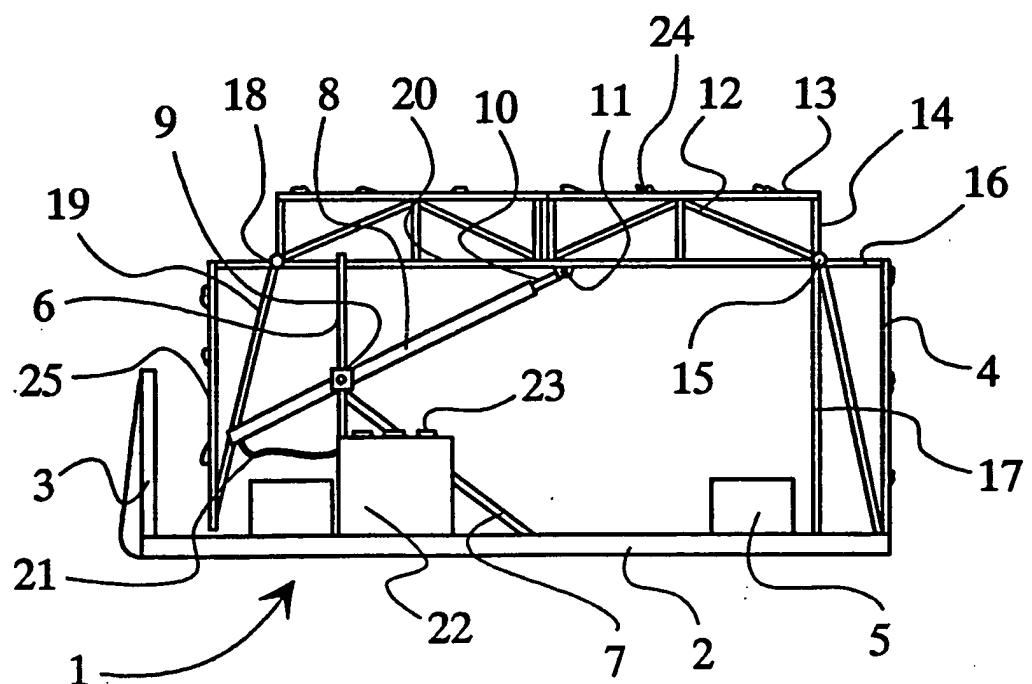
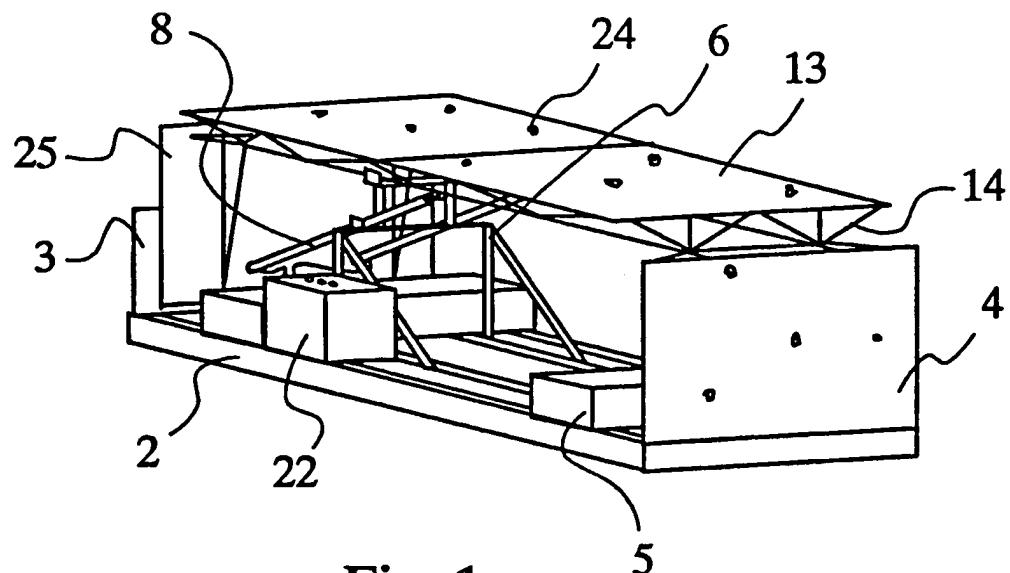
and that the dismounting portion of the procedure comprises at least the following stages:

- the locking between the middle section (13) and the bottom section (4) is released
- the climbing wall is lowered substantially to its transport position by means of one or more power means (8) by turning the combined top and middle sections about a joint (15) between the bottom section (4) and the middle section
- the locking between the middle section (13) and the top section (25) is released
- the top section (25) is turned substantially to its transport position
- after the climbing wall has been put back to its transport position, the whole assembly is lifted onto the platform of a transport means, such as a truck.

3. Climbing wall e.g. for outdoor use, said climbing wall comprising a wall part and a structure to which the wall part is attached, characterized in that the climbing wall consists of at least two climbing sections linked together with a joint, of which the lower section (4) is substantially a fixed part and the upper section (13,25) can be turned by means of a power means, such as a hydraulic cylinder (8), from a transport position to a climbing position so that the upper section forms an extension of the lower section.

4. Climbing wall according to claim 3, characterized in that the climbing wall assembly is constructed as a travelling platform unit (1) whose basic part consists of 5 main beams (2) and a rear wall (4) attached to the ends of the main beams, the outward-facing back surface of said rear wall constituting the lower part of the climbing wall.

1/3



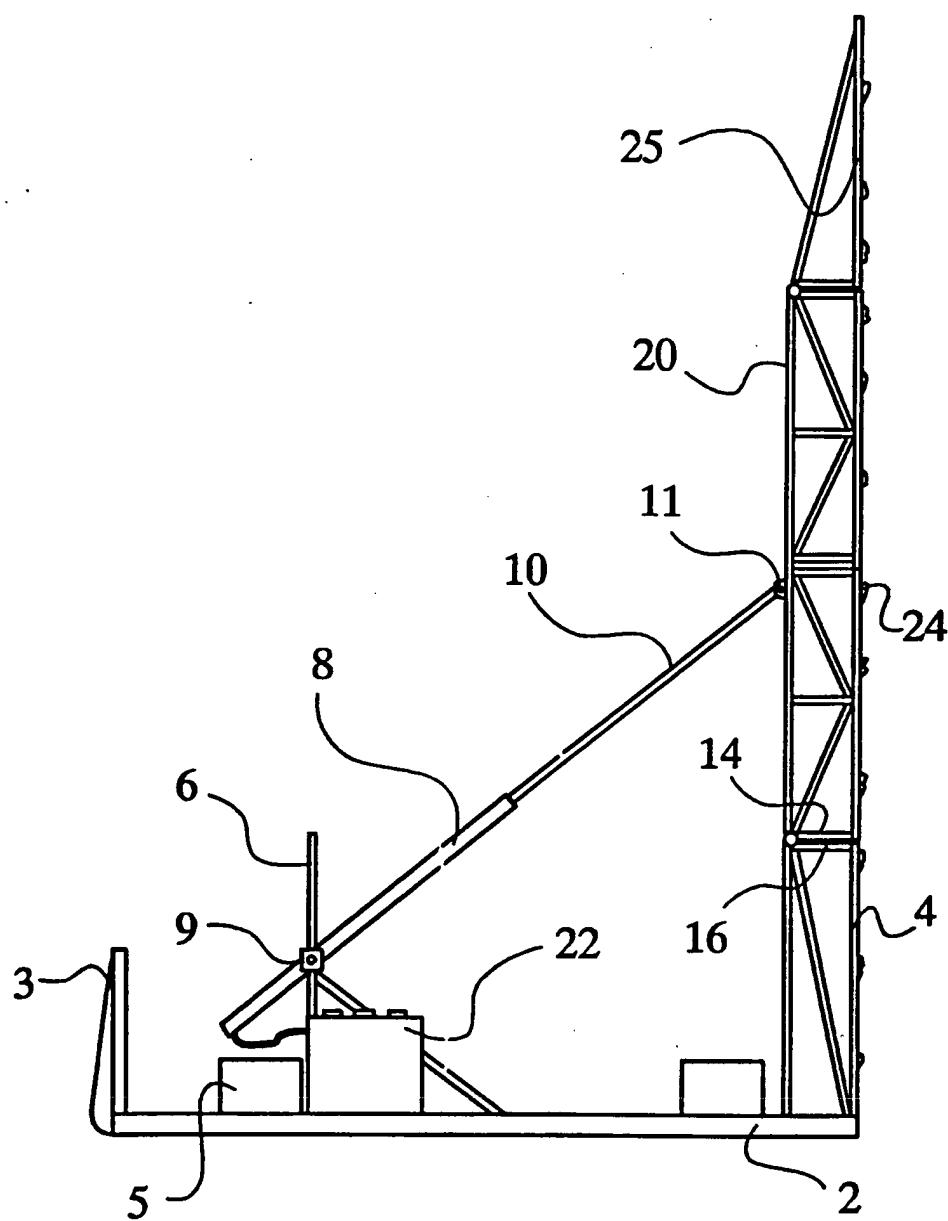


Fig. 3

3/3



Fig. 4

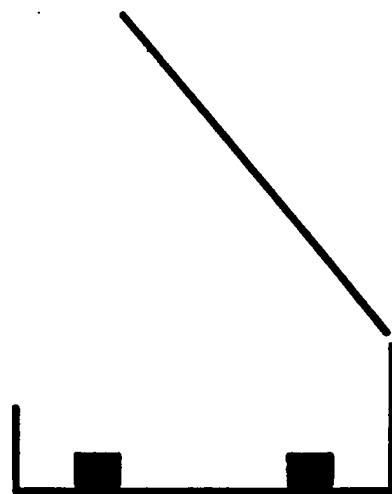


Fig. 5

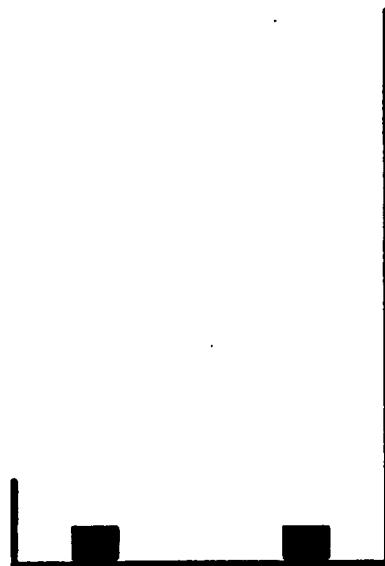


Fig. 6

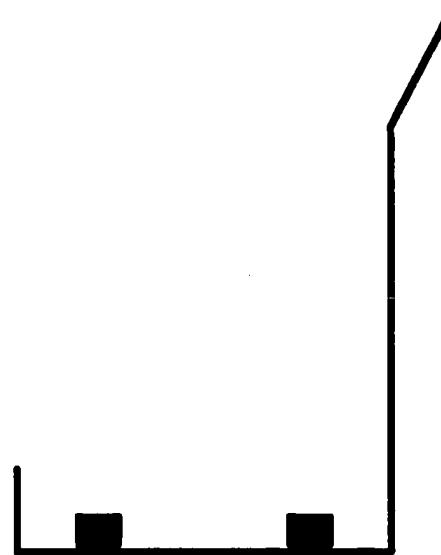


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 95/00259

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A63B 69/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9108806 A1 (NORAL S.A.R.L.), 27 June 1991 (27.06.91) --	3-4
A	EP 0329585 A1 (COSQUER, P.J.), 23 August 1989 (23.08.89) -- -----	1-4

Further documents are listed in the continuation of Box C.

See patent family annex.

- * Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search
14 August 1995

Date of mailing of the international search report

06.09.95Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. + 46 8 666 02 86Authorized officer
Johan Löfstedt
Telephone No. + 46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

31/07/95

International application No.

PCT/FI 95/00259

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO-A1- 9108806	27/06/91	EP-A-	0433195	19/06/91
		FR-A,B-	2655553	14/06/91
		JP-T-	4505873	15/10/92
EP-A1- 0329585	23/08/89	FR-A,B-	2626480	04/08/89